Effectiveness of Amdro® Yard Treatment Applied as Individual Mound Treatments, Broadcast and in Combination

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Ambrands, the producers of Amdro® Fire Ant Bait (0.73% hydramethylnon), recently introduced a product they believe will be more consumer-friendly. Instead of an application rate of 2 lbs. per acre, which requires a special spreader, the new product, Amdro Yard Treatment (0.036% hydramethylnon), will be applied at over 20 lbs/acre using common fertilizer spreaders. This test was conducted to provide supporting effectiveness data on the new product.

Objective: Test the effectiveness of a reduced active ingredient, increased application rate Amdro broadcast product for the control of fire ants.

Materials and methods

The test was located in an ungrazed pasture near the town of Mumford, in central Texas. Vegetation at the site was somewhat tall, but fire ant mounds were well developed and visible thanks to plentiful rainfall early in the season. Soils were a patchy mix of heavy clay and sandy loam over claypan.

Plots were established during the week of June 25, 2002. Plots were 75 feet square (0.13 acres, roughly 1/8th acre) and were separated by a minimum of 20 feet from the nearest treated plot. Pre-counts were conducted on June 28. Mounds were evaluated using the minimal disturbance technique for all evaluations. Treatments were assigned using the method described in Barr and Best (2002) to reduce variability. Four replications were established for each treatment. Treatments are described in **Table 1**.

Treatments (see chart below) were applied on July 8, beginning with baits and ending with the broadcast contact insecticides in the late afternoon. Broadcast treatments were applied using an Earth-Way® Ev-–Spred hand-held seeder. Individual mound treatments (IMTs) were applied using appropriate measuring cups for application, followed by a one gallon drench using watering cans where indicated by label directions. Evaluations were conducted at 1, 3 and 11 days and 1, 2 and 5 months post-treatment. The entire plot was evaluated for active fire ant mounds. This test was combined with the following two trials (p.84 and p.87) to fully utilize the entire site during a period when suitable sites were very hard to find. Appropriate data were extracted, then analyzed separately using SAS, PROC ANOVA with means separated using Tukey's studentized range (HSD) test, $P < 0.05$.

Table 1. Treatments applied. Mumford, TX. Treated July 8, 2002.

Treatment (abbrev.)	Formulation	Rate	Application
Amdro® Yard	0.0036%	5 lbs/5,000 ft^2	broadcast
Amdro (Amd broad)	0.73% hydramethylnon	1.5 lbs/acre	broadcast
Amdro (Amd IMT)	0.73% hydramethylnon	5 tablespoons/	IMT, scatter around

Amdro broadcast +	0.73% hydramethylnon	1.5 lbs/acre + 5	broadcast followed
Over 'N Out®	0.0103% fipronil	2 lbs/1000 ft.^{2}	broadcast
untreated	N/A	N/A	N/A

Table 2. Results of imported fire ant mound evaluations - 0.125-acre plots, 4 replications. Mumford, TX. Treated July 8, 2002

	Mean number of active mounds						
Treatment	Pre	1 day	3 days	11 days	1 month	2 months	5 months
untreated	21.00 a	13.50 a	13.50 a	17.25 a	16.50 a	15.50 a	25.75 a
Amd YT	21.00 a	17.50 a	13.50 a	8.00 b	7.00 ab	6.50 a	16.00 ab
Amd Brd	20.75 a	13.50 a	11.00 a	4.25 b	3.75 b	4.25 a	18.00 ab
Amd IMT	21.00 a	15.00 a	15.00 a	7.75 b	5.75 ab	7.00 a	16.00 ab
Amd B+IMT	21.00 a	16.00 a	9.00 a	4.75 b	1.50 b	2.50 a	14.75 ab
Over 'N Out	20.75 a	15.50 a	12.25 a	9.50 ab	7.25 ab	4.00 a	8.50 b
F	21.58	3.85	1.13	7.26	3.99	1.85	4.00
P	0.0001	0.0119	0.4007	0.0005	0.0102	0.1454	0.0101
R^2	0.9201	0.6724	0.3751	0.7947	0.6802	0.4963	0.6806
MSD	4.6957	9.5155	15.577	8.4132	11.36	14.738	14.528

Means in the same column with the same letter are not significantly different. Means separated by Tukey's studentized range (HSD) test, $P < 0.05$. df = 15.

Results and Discussion

Hydramethylnon is one of the fastest acting fire ant bait active ingredients, particularly when used as an individual mound treatment (IMT). Consequently, evaluations for this trial were conducted on a short timetable at the beginning of the test. A one week evaluation was scheduled, but heavy rains prevented access to the test site and it was postponed until 11 days. None of the products showed any mound suppression at 1 day and only the combination Amdro treatment showed any numerical reduction at 3 days. By day 11, however, all the Amdro products had significantly ($P < 0.05$) fewer active mounds than the untreated control.

Active mound numbers in treated plots continued to drop numerically at the one month evaluation, though Amdro broadcast and the combination treatment were the only products with a significant reduction. There were no statistical differences at the two month evaluation, due mainly to high variability between plots, and the number of active mounds rose by a small number for all treatments except Over 'N Out.

First dry, then extremely wet weather prevented good evaluation conditions until mid-

December. Even then, most plots had standing water in them. Nevertheless, mound building was good, as evidenced by the highest average in control plots for the entire test. All treatments had returned to mound counts similar to those at one day post-treatment, with the exception of Over 'N Out (granular fipronil), which remained significantly ($P < 0.05$) lower.

The focus of the test, Amdro Yard Treatment, performed somewhat worse than traditional Amdro. This was largely due to its poor control in the one high-density plot, which never reached 50% control compared to pre- or one-day counts. This is a somewhat worrisome finding. The idea of a low-active ingredient, high application rate hydramethylnon product has been tested before with some poor test results (Drees et al 1995). The hypothesized explanation was that fire ant colonies, particularly the small, high-density multiple queen type, would become saturated with soybean oil before taking in enough toxicant for a fatal dose. The test in Wharton in 2001 (see High-Volume Broadcast Applications of Hydramethylnon Bait for the Control of Fire Ant Colonies, p.25) put some of those concerns to rest with some very good control with this same 0.036% hydramethylnon formulation. Unfortunately, because poor control was in the high-density plot (with a corresponding increase in small colonies) of this test, the fear of colony appetite saturation before a lethal dose was obtained has re-appeared.

Overall, product performance in this trial was poorer than what is usually expected of these treatments. Maximum suppression by any treatment on any date was only 91% by the Amdro combination at one month. Control generally hovered in the 50 - 70% range on a date-by-date basis. Even Over 'N Out, which has performed so impressively in other tests (Barr and Best, 2002; Sparks and Diffie, 1998) achieved a mere 75% maximum control. Given the range of treatment methods and past reliability of all the products, reasons for such poor performance remain unknown.

Literature Cited

Barr, CL and RL Best. 2002. Product evaluations, field research and new products resulting from applied research. SW Ento. Supplement 25:47-52.

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