

**Efficacy of Two Formulations of Logic® Fire Ant Bait
Brazos Co., Texas - 1997-98**

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Logic® fire ant bait is a conventionally formulated bait defatted corn cob grit as a physical carrier. The active ingredient (1.0% fenoxycarb) is mixed with soybean oil which acts as both the chemical's carrier and as the ant attractant. This test was conducted to test an new formulation of oil. Because the baits were numbered, it is not know whether the oil was a modified soybean oil or another type of oil entirely. The experimental bait had a more buttery smell, but otherwise, was identical in appearance and flow characteristics as the "old" formulation.

Materials and Methods

The test was conducted in an ungrazed pasture in western Brazos Co., Texas. Plots consisted of 0.25 acre squares (105 x 105 feet) with a 40 foot radius sampling area (0.115 ac) in the center. Plots were established and pre-counts made during the week of 13 October 1997. Treatments were applied 17 October using a Cyclone 1C1 hand-held seeder. Weather was partly cloudy, 75-85EF with moderately moist soil and actively foraging ants.

Evaluations, both pre and post-treatment were made using the minimal disturbance technique to determine mound activity. A mound was considered active if a sufficient number of ants, compared to untreated mounds, rose to the surface within 15-20 seconds of disturbance. Evaluations were conducted at 18 and 35 days, and 13, 23, 34 and 60 weeks post-treatment.

Results

Mean number of active mounds per 0.115 acre subplot (4 replications)

<u>Treatment</u>	<u>pre-count</u>	<u>18 day</u>	<u>35 day</u>	<u>13 week</u>	<u>23 week</u>	<u>34 week</u>
Untreated	17.75 a	14.50 a	13.00 a	20.25 a	17.75 a	24.25 a
"Old" Logic	16.50 a	16.50 a	10.75 a	20.50 a	20.00 a	3.75 b
"New" Logic	16.25 a	16.25 a	17.50 a	24.00 a	22.25 a	13.00 ab
<i>F</i>	7.61	1.38	2.37	0.70	0.25	3.29
Probability	0.0141	0.3486	0.1614	0.6411	0.9242	0.0898
R ²	0.8638	0.5353	0.6641	0.3699	0.1734	0.7326
Min. sig. diff.	4.2322	7.1499	8.6856	11.092	16.542	16.158

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

There were no significant differences ($P < 0.05$) between “old” formulation and “new” formulation fenoxycarb products for the duration of the test and no meaningful numerical differences until the final post-treatment count. At that time, both formulations reduced mound numbers versus untreated controls. “Old Logic” reduced active mound numbers statistically, versus untreated, and numerically versus the “new” formulation, 3.75 mounds/plot versus 13.00 mounds/plot. Field notes indicated that some of the mounds considered active in the “new” Logic were weak and probably not reproductively active.

The most interesting facet of the test is the length of time it took for fenoxycarb to suppress active mounds to any extent, versus untreated areas. No suppression whatsoever was noted through 23 weeks post-treatment. Treatments were applied in mid-October and did not achieve suppression until some time after late March and early June the following spring. Such extended colony decline periods have been noted in several other tests using insect growth regulator (IGR) baits applied in the fall. The recommendation of “treat in the fall for fewer fire ants in the spring” must be carefully considered when using IGR baits. Since IGR’s do not kill adult ants, colony decline is the result of natural mortality. During a mild, moist winter, as was had during 1997-98, little worker mortality occurred. Colony elimination was not seen until hot, dry weather began in May. Therefore, a late spring through late summer-early fall application of IGR baits may be more suitable for the rapid colony suppression desired by most people.