

**Evaluation of Ant Express™ for the Control of
Individual Red Imported Fire Ant Colonies
Brazos Co., Texas - 1997**

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The product Ant Express™ was evaluated for effectiveness in eliminating activity in red imported fire ant (*Solenopsis invicta* Buren) mounds. The product is a light brown, viscous liquid with a paraffin-like odor. It is mixed at a rate of 6 oz. per gallon of water with vigorous agitation and applied at a rate of one gallon of solution per mound. The product is described by the manufacturer as a “drilling mud” for oilfield use and degrades in the environment.

Materials and Methods

The test site was located in western Brazos County, Texas in an ungrazed pasture. Plots were laid out in a strip 35 feet wide and indeterminate length. Ten active fire ant mounds were marked with wire flags of one color (referred to as a plot). Another set of 10 mounds was then marked with another color flag and so on, alternating flag colors, until sufficient plots were marked down the length of the 35-foot strip. The length of each plot was measured and the lengths arrayed from highest to lowest and divided into 4 groups (replications) of 3 plots each (treatments). Within each replication, one plot was assigned to a treatment so that the total length of all plots for a treatment was as equal as possible. This method helps eliminate plot selection bias and equalizes perimeter length subject to ant re-invasion.

Treatments were applied on 18 September 1997 beginning in the morning. The weather was warm and sunny, temperature in the upper 70's to mid 80's and the clay soil was dry. The following treatments were applied:

<u>Treatment</u>	<u>Rate</u>
Ant Express™	6 oz. in 1 gal. water per mound
chlorpyrifos	1 oz. in 1 gal. water per mound
Untreated	1 gal. water per mound

Ant Express was prepared by mixing 60 oz. product with approximately 10 gallons of water in a plastic container. The product was added while vigorously stirring the water. Stirring continued for several minutes and the product appeared to dissipate completely. The standard treatment, chlorpyrifos, treatments were mixed in 2 gal. batches. All treatments were applied with plastic sprinkler cans without breaker nozzles so that the water stream broke through the mound surface. Additional solution was poured around the perimeter of each mound.

Due to the very dry weather and soil conditions, the test was repeated in an identical manner in a nearby area after several inches of rain fell. It was hoped that increased soil moisture and cooler weather would bring the ants closer to the surface and give Ant Express, in particular, better conditions in which to work. Sevin XLR® (41.2%, 4 lb/gal. carbaryl) was used as the standard (1.5 qt./100 gal. water). These treatments were applied 1 October 1997 and

Evaluations were conducted at 1, 3, 7, 14, 28 and 35 days. Evaluations were made by lightly disturbing the surface of the mound with a pointed tool handle or small shovel. A mound was considered active if a number of ants rose to the surface in a defensive manner within about 15 seconds of disturbance. At several points during the tests, plots were examined for the presence of new or "satellite" (unmarked, untreated) mounds. Results were analyzed using PC SAS ANOVA procedures and means separated by Tukey's studentized range test ($P < 0.05$).

Results and Discussion

Test 1

Mean no. active mounds per plot

Treatment	1-day	7-day	14-day	14 sat	14 tot	28-day	35-day	35 sat	35 tot
untreated	10.0 a	8.3 a	9.0 a	0.5 a	9.0 a	7.8 a	8.0 a	1.3 a	9.3 a
Ant Express	8.3 a	4.3 b	4.8 b	1.3 a	6.0 a	4.0 b	4.3 b	2.0 a	6.3 b
chlorpyrifos	1.0 b	0.3 c	0.5 c	0.0 a	1.0 b	0.0 c	0.0 c	1.5 a	1.5 c
<i>F</i>	18.28	13.22	37.10	1.19	7.43	16.97	85.80	2.73	30.08
Prob.	0.0014	0.0034	0.0002	0.4121	0.0149	0.0018	0.0001	0.1265	0.0004
Min sig. diff.	3.13	3.23	1.95	3.00	4.34	2.78	1.20	1.08	2.01

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

Test 2

Mean no. active mounds per plot

Treatment	1-day	7-day	14-day	28-day	35-day	35 sats	35 tot
untreated	8.8 a	8.5 a	8.8 a	9.3 a	8.5 a	2.0 a	10.5 a
Ant Express	8.5 a	7.5 a	6.8 a	7.0 b	5.5 a	0.5 a	6.0 ab
carbaryl	0.3 b	0.0 b	0.0 b	0.0 c	0.0 b	1.8 a	1.8 b
<i>F</i>	66.57	39.00	16.24	43.61	8.22	0.65	5.09
Prob.	0.0001	0.0002	0.0020	0.0001	0.0117	0.6711	0.0362
Min. sig diff.	1.66	2.05	3.13	2.01	4.15	3.41	5.38

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

As shown by the results of the first test, Ant Express significantly ($P < 0.05$) reduced active mound numbers versus water-drenched (untreated) mounds, at all evaluation points except one day, post-treatment. However, chlorpyrifos eliminated significantly more mounds than Ant Express at all evaluation dates. At most, Ant Express eliminated activity in 60% (day 28) of treated mounds, versus 100% (day 28 and 35) for chlorpyrifos.

In the second test, Ant Express was only significantly different from water-drenched (untreated) mounds at 28 days post-treatment. Ant Express reached maximum control at 35 days, where ant activity was eliminated in 45% of treated mounds. Carbaryl (Sevin) achieved 100% elimination of ant activity in treated mounds after the one day evaluation and continued to have significantly fewer active mounds than both Ant Express and water-drenched mounds at all evaluation points.

There were no significant differences in satellite mound formation between any treatments in either test. Lack of significant satellite mound formation indicated that chemical treatments likely eliminated colonies from treated mounds, rather than relocated them.

Overall, Ant Express appeared to eliminate activity in only about 50% of treated mounds regardless of temperature and soil moisture conditions. It must be kept in mind that these fire ant colonies were in rather large mound structures that are common in pasture situations in clay soils. Mounds of this size are unlikely to be found in sandy soils or in managed ornamental turf situations in any soil type. It is possible that Ant Express would be more efficacious under circumstances where colonies and mounds are smaller, but such a conclusion could only be drawn from further experimentation.