

Evaluation of Deltamethrin Dust for the Control of Imported Fire Ants

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The red imported fire ant, *Solenopsis invicta* Buren, is a major economic pest in Texas. This ant affects recreational activities and those who work outdoors. This trial evaluated two dust formulations used as individual mound treatment. The trial took place at Austin Tree Farm, a wholesale grower of ornamental trees, located on Colorado River bottom land. The soil type is fertile loam. The trial began on June 21, 2000 when temperatures were hot and the area was in a drought. This trial demonstrates the efficacy of dust formulations in the summer when ant activity is minimal.

According to a study conducted by the Texas A&M Agricultural Economics Department, people in the Austin area experienced significant expenditures due to fire ants of \$45 million. Homeowners in the Austin area experienced the highest costs among the sectors examined, with an average of \$145.39 per household (Lard, et al 2000, “The economic impact of red imported fire ant on the homescape,” Dept. Agric. Econ., Texas A&M University). This figure includes costs of treatments, repairs to electrical equipment, first aid, and other services.

Objectives

This trial was established to evaluate a new dust formulation and compare it to a known effective dust formula for control of fire ants. The trial was designed to observe the effectiveness of the material in summer conditions over a 30 day period.

Materials and Methods

This trial was established at Austin Tree Farm. The perimeter area of the entire farm was used, so that fire ant mounds could be flagged and monitored without much disruption of farm activity in the planting areas. The site was completely sunny and the fire ant mounds that were used bordered field areas. The farm is located approximately 25 yards from the Colorado River.

The products used were Orthene® (50% acephate) and Bengal Ultra Dust® (0.05% deltamethrin). Orthene usually provides control within 72 hours. Both dust formulations were applied at the recommended rate of application.

At 2, 7, 14, and 30 days after treatment, mounds were disturbed and evaluated for ant presence and activity, if any. Evaluation consisted of presence of live and active ants. Each mound was checked for 1) presence or absence of ant activity, 2) mound dispersal.

Results and Discussion

The results from this limited study indicate that the Bengal UltraDust® did not perform as well as Orthene® in hot, dry weather when ant activity is limited (Tables 1 & 2). Although the Orthene® performed as expected, there are limitations with all fire ant control pesticides. This study should be repeated in more conducive weather conditions to make another evaluation of the deltamethrin dust formulation.

Table 1. Red imported fire ant mounds before and following treatment with ant mound treatments, Austin Tree Farm, Travis Co. TX, treated June 21, 2000.

<u>Treatment</u>	Number of active fire ant mounds/5 (4 replicates)/ (Percent Control in parentheses)				
	<u>Pre- June 21</u>	Day Following treatment			
		<u>2-days June 23</u>	<u>7-day June 28</u>	<u>14-days July 5</u>	<u>30-days July 21</u>
Untreated control	5.0	5.0	4.3	4.0	2.5 (1 new)
acephate, 50% dust ¹ (Orthene®)	5.0 (94%)	0.3 (93%)	0.3 (2 new) (99%)	0.3 (100%)	0.0
deltamethrin 0.05% ² Bengal® UltraDust® Fire Ant Killer	5.0	2.8 (44%)	2.5 (1 new) (42%)	2.0 (2 new) (50%)	1.5 (3 new) (40%)

¹ Use rate: Sprinkle 1 tablespoon dry powder over each mound. Do not disturb the mounds while treating.

² Use rate: Evenly sprinkle 1 teaspoon (approx. ½/ oz) over the top of each mound. Do not disturb the mound. Perimeter treatment: Apply uniformly and uniformly to the foundation and crawl spaces where pests are active and may find entrance.

Table 2. Mean number of active mounds of five treated, Austin Tree Farm, Travis Co. TX, treated June 21, 2000.

Treatment	2 days	7 days	14 days	30 days
Untreated	5.00 a	4.25 a	4.00 a	2.50 a
acephate	0.25 c	0.25 c	0.25 c	0.00 b
deltamethrin	3.00 b	2.50 b	2.75 b	1.50 ab
<i>F</i>	74.45	22.27	37.50	5.70
prob.	0.0001	0.0003	0.0001	0.0252
R ²	0.9430	0.8319	0.8929	0.5588
min. sig. diff.	1.0913	1.6778	1.2312	2.081

Means followed by different letters in the same column are significantly different ($P < 0.05$) using SAS analysis of variance procedures. Means separated using Tukey's studentized range test (Statistical analysis performed by Dr. Charles L. Barr, Extension Program Specialist, Fire Ant Project).

Product information:

Product: Ortho® Orthene® Fire Ant Killer

Manufacturer: Solaris®, The Solaris Group of Monsanto Company, P.O. Box 5008 San Ramon, CA 94583-0808 800/225-2883 www.ortho.com

Ingredient: acephate 50% (Organophosphate) CAUTION

Use rate: Sprinkle 1 tablespoon dry powder over each mound. Do not disturb the mounds while treating.

Use site(s): Home lawns, around ornamental plants (including flowers, trees & shrubs). Do not apply directly to water.

Protective clothing: Avoid contact with skin, eyes and clothing. Avoid breathing dust. Wear chemical resistant gloves, long pants, and long-sleeved shirt. Wash te gloves with soap and water before removing.

Remarks: No watering, treats 113 mounds.

Cost: 1 lb. Fire Ant Orthene: \$11.43

Product: Bengal® UltraDust® Fire Ant Killer Kills the Queen Fast, Effective Kill of Fire Ants Ready To Use No Watering-In Odorless

Manufacturer: Bengal Chemical Company

13739 Airline Highway, Baton Rouge, LA 70817 225/753-1313 www.bengal.com

Ingredient: deltamethrin: [(s)-alpha-cyano-3-phenoxybenzyl-(1R,3R)-3-(2-2dibromovinyl)-2,2-dimethylcyclopropanecarboxylate] 0.05% (Pyrethroid) CAUTION

Use rate: Evenly sprinkle 1 teaspoon (approx. 1/2 oz) over the top of each mound. Do not disturb the mound.

Perimeter treatment: Apply uniformly and uniformly to the foundation and crawl spaces where pests are active and may find entrance.

Use site(s): Also for use around roses, flowers and ornamentals. Do not apply directly to water.

Protective clothing: Avoid contact with skin.

Remarks: ;

Cost: 1 lb. UltraDust Fire Ant Kill Bengal: \$4.96