

Evaluation of Fire Ant Insecticide Products as Single Mound Treatments Along Hardscape Areas

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Summary: The red imported fire ant, *Solenopsis invicta* Buren (herein referred to as the fire ant) has become an important economic threat in urban Texas. The fire ant affects recreational activities as well as agricultural operations. This trial evaluated two contact insecticides and one toxicant bait product, labeled for treatment of individual fire ant mounds. These mounds were located alongside a well maintained paved road which will represented the “hardscape.” The treatments were applied May 15, 2000 when temperatures were moderate, moisture was good and fire ant activity was good. All products effectively reduced fire ant mound activity after 2 weeks. At three days the bait product reduced mound activity 48% but was not as efficient as the contact insecticides which had reduced activity 100%. This trial demonstrates that toxicant baits products can be used as single mound treatments, but do not act as fast as contact insecticides.

Problem

The fire ant has become an important economic threat in urban Texas. According to a 1998 study conducted by the Department of Agricultural Economics, TX A&M University, of fire ant related costs in Dallas, Fort Worth, Austin, San Antonio, and Houston, fire ants have serious economic effects for these metro areas of Texas. Households experienced the largest costs among sectors examined with a average of \$151 per households spent annually which included repairs to property and equipment, first-aid, pesticides, baits, and professional services. A full damage assessment for Texas must include additional sectors, and the estimated costs of \$581 million per year for the selected sectors underscore the impact of this pest. Treatment costs accounted for over 50 percent of this total cost. In Houston the average medical treatment costs per household of \$25.46. The duration of injury for children and adults was 6.6 days and 5.6 days, respectively. The fire ant limits outdoor activities and homeowners and producers incur added costs in managing the fire ant.

Objectives

This trial was established to evaluate Orthene® Fire Ant Killer Dust (50% acephate), Spectracide® Fire Ant Killer Granules (5% diazinon) and Amdro® Fire Ant Bait (0.73% hydramethylnon) for application to single fire ant mounds that have been established next to a hardscape (paved road). The trial was designed to observe the effectiveness of the materials in reducing fire ant activity over a 2 week period.

Materials and Methods

This trial was established in Houston, TX, in west Harris Co., May 15, 2000. Fire ant mounds were located on shoulders of a paved road where they were built close to the pavement. The site had been mowed before establishment of treated areas. Only trace amounts of rain fell the week preceding the treatments but over 5.5 inches of rain fell during the 2 week duration of the test. Eighty active fire ant mounds were identified and marked in consecutive groups of five along the pavement. Each treatment was replicated 4 times and a treatment was randomly assigned a group of five mounds within each replicate.

The fire ant control products evaluated were the toxicant bait Amdro®, and contact insecticides, Orthene® and, Spectracide®. When used as a single mound treatment in open areas Amdro® usually provides control within 2-7 days of application, while control with Orthene® or Spectracide® occurs within hours. These products were applied as directed by label at the rates listed in Table 1 and the trial was set to run approximately 2 weeks.

At 3, 7 and 18 days after treatment (DAT) each mound was checked for presence or absence of fire ant activity. A small diameter stick was inserted into the mound. If no fire ants appeared after 15 seconds, the mound was considered inactive (0). If fire ants were present within the allotted time period the mound activity was assigned a 1 (< 10 fire ants or freshly worked soil), 2 (some fire ants, not aggressive), or 3 (many aggressive fire ants).

Results

Table 1 shows the effectiveness of the materials during the evaluation period. All products controlled the fire ant 18 DAT. Amdro® treated mounds was reducing fire ant activity 3 & 7 DAT, but was not as effective as Orthene® or Spectracide® at these evaluation dates.

Conclusion

The results from this study indicate that the fire ant control products tested were effective in controlling fire ants that build mounds along a hardscape. The bait product, though effective reducing fire ant activity over a 2 week period was not as fast as the other products tested. However, bait products can provide relatively fast colony elimination when applied as individual mound treatments to inaccessible colonies, giving an acceptable reduction in fire ant mound activity within 2 weeks after application. Previous studies have shown slower suppression occurs after some bait products are broadcast-applied. A larger, replicated study is necessary to confirm the results of this demonstration trial.

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Table 1. Results of reduction in fire ant mound activity after treatment with different products labeled for fire ant control. Harris Co., TX, 2000.

Treatment/ ingredient ¹	Rate (product per mound)	Activity Index Average From 20 Mound Sample ²			
		Pretreatment	3 DAT	7 DAT	18 DAT
Untreated	NA	3	2.7 a	2.5 a	2.1 a
Amdro® (hydramethylnon)	5 tbsp	3	1.3 b	0.8 b	0.1 c
Spectracide® (diazinon)	½ cup	3	0.0 c	0.0 c	0.0 c
Orthene® (acephate)	1 tbsp	3	0.0 c	0.0 c	0.0 c

1. Plots treated on May 15, 2000

2. Numbers in columns followed by the same letter are not significantly different at $P \leq 0.05$.